UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,706	06/22/2005	Hong Koo Kim	076333-0360	5899

22428 7590 04/09/2008
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
VAN, LUAN V	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
04/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,706	KIM ET AL.	
	Examiner	Art Unit	
	LUAN V. VAN	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-33 and 35-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-33 and 35-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's amendment of January 22, 2008 does not render the application allowable.

Status of Objections and Rejections

All rejections from the previous office action are withdrawn in view of Applicant's amendment. New grounds of rejection under 35 U.S.C. 103(a) are necessitated by the amendments.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 39-41, 43, and 44-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the **enablement requirement**. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 39 is amended to recite anodizing a first material plurality of times to form a plurality of separated cells, each cell comprising nanopores arranged in a

predetermined order pattern. However, since claim 39 also recites that the patterned is formed and determined by the photolithographic mask, it is unclear how a plurality of separated cells can be formed when the photolithographic mask already determines the pattern.

Claim 39 recites the limitation "the first material". However, there is insufficient antecedent basis for this limitation in the claim.

Claim 44 recites anodically oxidizing a metal film to selectively form nanopores and presumably the nanopore array. The claim also recites the nanopore array is formed in an optically transmissive layer. However, it is unclear how the nanopore array can be formed in an anodically oxidized metal film while at the same time formed in an optically transmissive layer. In addition, the specification does not clarify how the anodically oxidized metal film is formed in relation to the transmissive layer.

Claim 44 recites the limitation "the nanopore array". However, there is insufficient antecedent basis for this limitation in the claim.

Claims 39-41, 43, and 44-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the **written description requirement**. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 39 is amended to recite anodizing a first material plurality of times to form a plurality of separated cells, each cell comprising nanopores arranged in a predetermined order pattern. However, the specification does not support a method

comprising photolithographically patterning metal film in combination with anodically oxidizing a plow the of times to form a plurality of separated cells, each cell comprising nanopores arranged in a predetermined order pattern.

Claim 44 recites anodically oxidizing a metal film to selectively form nanopores and presumably the nanopore array. The claim also recites the nanopore array is formed in an optically transmissive layer. However, the specification does not support anodically oxidizing a metal film to form a nanopore array while the nanopore array is also formed in an optically transmissive layer. The combination of steps is unsupported by the applicant's specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 47, and 50 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohkura et al. (US patent 6610463).

Ohkura et al. teach a method of making a nanopore array with a controlled first pattern, comprising: providing a substrate 2 (Fig. 1) comprising a first surface having a first pattern 1 (Fig. 1E1); depositing a first material 11 (Fig. 1F1) capable of forming nanopores onto said first surface having the first pattern; and anodically oxidizing (column 8 line 54) said first material to form the nanopore array 14 with the controlled first pattern in the anodically oxidized first material. The cobalt (column 12 lines 39-42) formed in the nanopores is broadly interpreted to be a fusible link since it is a conductive material.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 22-27, 32, 36-38, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkura et al. (US patent 6610463).

Regarding claims 22 and 42, Ohkura et al. teach a method of making a nanopore array with a controlled first pattern, comprising: providing a substrate 2 (Fig. 1) comprising a first surface having a first pattern 1 (Fig. 1E1); depositing a first material 11 (Fig. 1F1) capable of forming nanopores onto said first surface having the first pattern; and anodically oxidizing (column 8 line 54) said first material to form the nanopore array 14 with the controlled first pattern in the anodically oxidized first material.

Ohkura et al. differ from the instant claims in that the reference does not explicitly teach anodizing the first material a plurality of times under different conditions.

However, Ohkura et al. teach "in the formation of pores by anodizing, **the intervals between the pores can be controlled to some degree through the setting of process conditions**, i.e., the kind, concentration and temperature of an electrolytic solution used for anodizing, **the method of applying an anodizing potential, the potential value**, time, etc. Accordingly, it is preferable to design a ‘recess-projection pattern’ (recesses, in particular) with pore intervals presupposed from the process conditions" (column 7 lines 50-57).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al. by anodically oxidizing the aluminum using different voltages in order to control the intervals between the pores as suggested by Ohkura et al. A plurality of separated cells would be formed

as a result of the different applied voltages because the intervals spacing between the porous are changed.

Regarding claim 23, Ohkura et al. teach further comprising: forming a photoresist layer 3 (Fig. 1D1) on the first surface; patterning the photoresist layer to form a patterned photoresist layer; and etching the first surface (column 8 lines 8-26) using the photoresist layer as a mask to form the first pattern in the first surface.

Regarding claim 24, Ohkura et al. teach wherein the step of patterning the photoresist layer comprises holographically exposing (i.e., interference lithography, column 3 lines 11-22) the photoresist layer and selectively removing (via development, column 7 lines 34-35) portions of the photoresist layer after the exposing step to form a controlled photoresist pattern.

Regarding claim 25, Ohkura et al. teach wherein the step of holographically exposing comprises holographically exposing the photoresist layer a plurality of times while rotating (column 7 lines 26-33) the substrate and the exposing beam relative to each other between exposures to form a controlled three dimensional pattern in the photoresist layer.

Regarding claim 26, Ohkura et al. teach wherein the first material 1 contains first depressions 10 which correspond to second depressions 12 in the first pattern in the first surface of the substrate and the nanopores 14 are selectively formed in the first depressions.

Regarding claim 27, Ohkura et al. teach wherein the first material comprises an anodically anodizable metal, i.e. aluminum (column 8 lines 41-42).

Regarding claim 32, Ohkura et al. teach wherein the step of filling comprises selectively filling the nanopores with a metal by electroplating (column 12 lines 39-42).

Regarding claim 36, Ohkura et al. differ from the instant claims in that the reference does not explicitly teach depositing a metal film on the first for the resist pattern. However, Ohkura et al. teach the "material of a film used to form a ‘recess-projection pattern’ (second layer) in the above-described form (1) or (3) is, for example, a positive resist, or a negative resist, and may be selected from other various materials. SiO2 is used in the process described below" (column 6 lines 7-11). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al. depositing a metal film on the resist pattern material instead of the silicon dioxide material as suggested by Ohkura et al. in order to form the recess-projection pattern and to promote the formation of nanopores corresponding to the pattern of the underlying film.

Regarding claims 37 and 38, Ohkura et al. differ from the instant claims in that the reference does not explicitly teach using a hard mask to etch the substrate. However, Ohkura et al. teach using a photoresist pattern 15 (Fig. 2B1) to etch the substrate.

The examiner takes Official Notice that it is well known to use a hardmask for etching a substrate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al. by replacing the photoresist with a hardmask, because a hardmask would provide greater etch

resistance than the photoresist, thus allowing the substrate to be etched for a longer time. With respect to forming a second resist pattern in claim 38, Ohkura et al. teach exposing the substrate is second time at a different angle (column 7 lines 26-33). Therefore, a second resist pattern is formed when the resist is exposed a second time at a different angle.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkura et al. in view of Zhang et al. (US patent 6709929).

Ohkura et al. teach the method as described above. Ohkura et al. differ from the instant claims in that the reference does not explicitly teach using the anodically oxidized the first material as a mask.

Zhang et al. teach a method of forming a nano-scare electronic and optoelectronic devices including etching an anodized aluminum oxide thin film and using the anodic aluminum oxide layer as an etch mask (column 13 lines 23-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al. by using the anodized aluminum oxide as the etch mask as taught by Zhang et al., because it would enable nanopores to be formed on a substrate material other than the aluminum oxide layer. It would have been obvious to one having ordinary skill in the art to have further modified the method of Ohkura et al. by removing the anodic aluminum oxide in order to expose the nanopores on the substrate material.

Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkura et al. in view of Zhang et al., and further in view of Iwasaki et al. (US patent 6278231).

Ohkura et al. and Zhang et al. teach the method as described above. Ohkura et al. differ from the instant claims in that the reference does not explicitly teach filling the nanopores with a second material.

Iwasaki et al. teach a method of forming a nanostructure including an anodized film comprising nanoholes, wherein cobalt and copper or electrodeposited inside the nanoholes into the form of a multilayer inclusion to produce a giant magnetoresistive device capable of responding to a magnetic field (column 12 lines 10-20).

Regarding claim 29, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al., and Zhang et al. by depositing a second material in the nanopores as taught by Iwasaki et al., because it would form a multilayer giant magnetoresistive device capable of responding to a magnetic field.

Regarding claim 30, it would have been obvious to one having ordinary skill in the art to have modified the method of Ohkura et al., and Zhang et al. by contacting the second material with a solid state device as taught by Iwasaki et al., because it would enable an electrical signal to be read from or write to the multilayer giant magnetoresistive device.

Claims 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkura et al. in view of Iwasaki et al. (US patent 6278231).

Ohkura et al. teach the method as described above. Ohkura et al. differ from the instant claims in that the reference does not explicitly teach filling the nanopores with a second material or vapor depositing on the metal located in the nanopores.

Iwasaki et al. teach a method of forming a nanostructure including an anodized film comprising nanoholes, wherein cobalt and copper or electrodeposited inside the nanoholes into the form of a multilayer inclusion to produce a giant magnetoresistive device capable of responding to a magnetic field (column 12 lines 10-20). Furthermore, Iwasaki et al. teach that the inclusion in the nanoholes can be formed by CVD, or chemical vapor deposition (column 11 lines 61-67).

Regarding claim 31, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al. by depositing a second material in the nanopores as taught by Iwasaki et al., because it would form a multilayer giant magnetoresistive device capable of responding to a magnetic field.

Regarding claim 33, it would have been obvious to one having ordinary skill in the art to have modified the method of Ohkura et al. by vapor depositing on the metal located in the nanopores as taught by Iwasaki et al., because it would enable the nanopores to be formed in a dry vacuum environment.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkura et al. in view of Sekinger et al. (US patent 5975976).

Ohkura et al. teach the method as described above. Ohkura et al. differ from the instant claims in that the reference does not explicitly teach placing a conformal template material into the nanopores and removing the template material.

Sekinger et al. teach forming an anodic aluminum oxide mold body having pores, placing a conformal template material 14 (Fig. 3-4), and removing the template material containing the ridges from the nanopores (Fig. 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al. by placing a conformal material in the nanopores and removing the template material as taught by Sekinger et al., because it would form a well-defined emitter structure having the shape of the mold body.

Claims 39, 40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (US patent 6139713) in view of Sprintschnik et al.

Regarding claims 39 and 43, Matsuda et al. teach a method of making a nanopore arrays with a controlled pattern, comprising: providing a metal film 10 (Fig. 2) capable of forming nanopores; photolithographically patterning (Fig. 2) a first surface of the metal film to form a controlled pattern of depressions 11 in a first surface of the metal film; and anodically oxidizing (column 5 lines 39-42) said metal film to selectively form the nanopores in the depressions in the anodically oxidized metal film.

Matsuda et al. differ from the instant claims in that the reference does not explicitly teach anodizing the first material a plurality of times under different conditions.

However, Matsuda et al. teach that the interval between the porous of the porous anodized aluminum film is proportional to the voltage in anodizing, i.e., the anodizing voltage (column 5 line 66 -- column 6 line 2).

Sprintschnik et al. teach a two-stage anodic oxidation process of aluminum using different voltages (see Abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Matsuda et al. by anodically oxidizing the aluminum using different voltages as taught by Sprintschnik et al. in order to control the interval spacing between the pores as suggested by Matsuda et al.

Regarding claim 40, Matsuda et al. teach further comprisigg: forming a photoresist layer 20 on the first surface of the metal film 10; patterning the photoresist layer to form a patterned photoresist layer (Fig. 2); and etching (column 5 lines 31-35) the first surface of the metal film using the photoresist layer as a mask to form the first pattern in the first surface of the metal film.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Sprintschnik et al., and further in view of Ohkura et al.

Matsuda et al. and Sprintschnik et al. teach the method as described above. Matsuda et al. differ from the instant claims in that the reference does not explicitly teach holographically exposing the photoresist layer.

Ohkura et al. teach a method of manufacturing a nanostructure which enables cylindrical pores array of according to any periodic pattern to be easily made on a substrate 3 large area at a low cost in a short time, wherein a photoresist layer is exposed by performing at least 2 steps of interference lithography (i.e., holographic lithography, column 3 lines 11-22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Matsuda et al. and Sprintschnik et al. by holographically exposing the photoresist as taught by Ohkura et al., because it would enable cylindrical pores having a periodic pattern to be easily made on the substrate to a large area at a low cost in a short time.

Claims 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kambe et al. (US pub 2003/0031438) in view of Matsuda et al.

Kambe et al. teach a method of making a photonic crystal comprising: providing a metal film capable of forming nanopores; and anodically oxidizing said metal film to selectively form nanopores in the depressions in the anodically oxidized metal film (paragraph 215); wherein the nanopore array comprises a predetermined ordered pattern of nanopores and wherein the nanopore array is formed in an optically transmissive layer 152 (Fig. 7, paragraph 156) such that an optical path is formed in predetermined nanopore free areas of the optically transmissive layer that are bounded by the nanopores of the nanopore array, in order to form the photonic crystal.

Kambe et al. differ from the instant claims in that the reference does not explicitly teach a controlled pattern of depressions.

Matsuda et al. teach a method of making a nanopore arrays with a controlled pattern, comprising: providing a metal film 10 (Fig. 2) capable of forming nanopores; photolithographically patterning (Fig. 2) a first surface of the metal film to form a controlled pattern of depressions 11 in a first surface of the metal film; and anodically oxidizing (column 5 lines 39-42) said metal film to selectively form the nanopores in the depressions in the anodically oxidized metal film.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Kambe et al. by forming the pattern of depressions of Matsuda et al., because it would maximize the regularity of pores to be formed by anodizing, since the pores of the metal film will be formed in the locations corresponding to those of the depressions (column 5 lines 1-6 of Matsuda et al.).

Claims 48, 49 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkura et al. in view of Iwasaki et al. ‘409 (US patent 6476409).

Ohkura et al. teach the method as described above. Ohkura et al. differ from the instant claims in that the reference does not explicitly teach filling the nanopores with the specific materials of the instant claim.

Iwasaki et al. ‘409 teach that the pores in a metal structure can be filled with a functional material such as a metal, a semiconductor, a dielectric material, a magnetic

material, or the like (column 7 lines 1-3). The dielectric material broadly reads on the antifuse dielectric of the instant claims.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al. by depositing the materials of Iwasaki et al. ‘409, because it would form a device having the desired electrical properties associated with the specific material.

Response to Arguments

The applicant argues that Ohkura et al. do not describe a plurality of anodization steps. The examiner acknowledges that this is correct, therefore Ohkura et al. do not anticipate independent claim 22. However, Ohkura et al. teach "in the formation of pores by anodizing, **the intervals between the pores can be controlled to some degree through the setting of process conditions**, i.e., the kind, concentration and temperature of an electrolytic solution used for anodizing, **the method of applying an anodizing potential, the potential value**, time, etc. Accordingly, it is preferable to design a ‘recess-projection pattern’ (recesses, in particular) with pore intervals presupposed from the process conditions" (column 7 lines 50-57).

Therefore, since Ohkura et al. teach that the intervals between the pores can be controlled by changing the potential value, i.e. voltage, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Ohkura et al. by anodically oxidizing the aluminum using different voltages in order to change the intervals between the pores as suggested by Ohkura et

al. A plurality of separated cells would be formed as a result of the different applied voltages because the intervals spacing between the porous are changed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

LVV
March 31, 2008